MISCELLANEOUS REPORT NO. 28

THE FOREST INSECT SITUATION IN THE LAKE STATES IN 1953

By L. C. Beckwith and H. J. MacAloney, Entomologists

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
Lake States Forest Experiment Station

March, 1954

Miscellaneous Report No. 28

THE FOREST INSECT SITUATION IN THE LAKE STATES IN 1953

By L.C. Beckwith and H. J. MacAloney 1/
Lake States Forest Experiment Station 2/

rest production can be maintained at high levels only if forest stands are otected from enemies. Protection from fire has long been a major activity forestry agencies in the Lake States. However, the need for protection om the widespread damage of insect pests has only recently received coordi- ted regional effort. A first step has been the initiation of surveys to termine the current and probable damage from important forest insect pests.

PAST SURVEYS

e Forest Pest Control Act of 1947 authorized cooperative surveys of forest sts. Such surveys were begun in 1949 in the Lake States by the Milwaukee orest Insect Laboratory of the U. S. Bureau of Entomology and Plant Quarantine now the Forest Insect Research Division of the Lake States Forest Experiment tation) in cooperation with other agencies, and, have been repeated annually ince that time.

efore 1949 there had been a number of forest pest surveys in the Lake States, ut not on a coordinated regional basis. Since then local surveys have con- inued and new ones have been initiated. For example, (1) the Forest Insect aboratory at Milwaukee had conducted a number of surveys before 1949, (2) he North Central Region of the U. S. Forest Service for several years compiled n annual report of forest insect conditions on national forest lands, (3) the niversity of Minnesota, in cooperation with the State Conservation Department, as reported on forest pests in Minnesota for at least a decade, (4) in Wiscon- in the State Entomologist has compiled annual reports, and in addition in ecent years the Conservation Department has developed a full scale detection urvey, which is the basis for an annual report on forest insect conditions in he state, and (5) the Michigan Conservation Department in cooperation with he University of Michigan and Michigan State College, in 1950 began reporting orest pest occurrence and damage intensity within the State. The initiation of he regional survey made it possible to integrate the information from all these gencies into one report and to cover areas not previously surveyed.

1/ Entomologist and entomologist in charge, Forest Insect Research Division, Milwaukee, Wis. The authors have assembled this report from information submitted by the cooperating agencies listed on page 2.
2/ Maintained at St. Paul 1, Minnesota by the U. S. Dept. of Agriculture, Forest Service, in cooperation with the University of Minnesota.

THE 1953 SURVEY

·ing 1953 the Division of Forest Insect Research, Lake States Forest Experi-
t Station, obtained research and survey information on forest insects in
Lake States from the following cooperating agencies:

Minnesota:	Office of the State Entomologist Department of Conservation University of Minnesota
Wisconsin:	Office of the State Entomologist Conservation Department University of Wisconsin
Michigan:	Department of Conservation University of Michigan Michigan State College
Industry:	William Bonifas Lumber Company
U. S. Government:	Department of the Interior Office of Indian Affairs
	Department of Agriculture U. S. Forest Service

his information was assembled and developed into the following report.

ne more important species reported in 1953 are discussed in some detail;
nose of less importance are given brief mention. Insect species that have
aused heavy damage in the past, even though not reported in 1953, are in-
luded to emphasize their potential importance, so that if any evidence of
heir presence should be found, it can be called to the attention of one of
he above agencies.

ACK-PINE BUDWORM - Choristoneura pinus Free.

he jack-pine budworm has been an important pest in the Lake States for the
ast 30 years. Although not as damaging as is the spruce budworm, Choristoneura
umiferana (Clem.), in the spruce-fir types, some mortality, top kill, and loss
f increment has occurred. Surveys in lower Michigan indicated there was an
verage cordwood loss of about three percent in pole-size stands in 1951 and
n 1952. Losses of saplings and reproduction also occurred. The infestation
leclined and no additional loss occurred in the northern half of the Lower
Peninsula in 1953, especially in Roscommon, Ogemaw, Crawford, Kalkaska and
Grand Traverse Counties, which had previously been heavily infested. The
highest remaining populations in the Lower Peninsula are in Montmorency and
Presque Isle Counties, where heavy defoliation continued. In the Upper Penin-
sula, the outbreak increased to severe proportions during 1953 in Luce County,
where surveys (conducted during April, May, and June) revealed that the insect
was in outbreak stages over 6,000 acres of jack pine of various ages and stand
densities and had caused heavy defoliation on at least 4,000 acres of this
area. The infestation in Delta County is at a low level. A new outbreak has
appeared in western Chippewa County within the Marquette National Forest.

Wisconsin, infestations have been very light. The greatest potential danger ears to be in Douglas and Washburn Counties. The insect is also present in nett County.

eral unconfirmed reports of the budworm's presence in Minnesota have been eived. A single confirmed specimen was collected at Bena, Minnesota.

CH SAWFLY - Pristiphora erichsonii (Htg.)

larch sawfly has caused a large amount of damage in the Lake States in the t. In 1953 this insect continued in outbreak proportions in northern nesota where it has been increasing annually since 1945. Aerial surveys ce 1951 show that the total area of complete defoliation is increasing in ze and shifting northward. In 1953, approximately 255,000 acres suffered mplete defoliation as compared to about 149,000 acres during 1952. The erage defoliation throughout the northern part of the state as a whole, sed on ground surveys, was 84 percent as compared to 57 and 71 percent in 51 and 1952, respectively. In general, most areas to the north of U. S. ghway 2 suffered partial to complete defoliation in 1953.

ee mortality that could be attributed directly to the sawfly has not been served. Attacks by the eastern larch beetle, Dendroctonus simplex Lec., ve hastened the death of some tamaracks on various areas, following inundation, terioration of the site, or cutting operations.

the Upper Peninsula of Michigan, the sawfly was more abundant in 1953 than previous years, although no serious defoliation occurred. Small populations re present throughout the peninsula, with the heaviest infestations in Baraga d Houghton Counties. The sawfly was also found in four tamarack sites in nistee County in the Lower Peninsula. This represents the first report of e sawfly in this section of the state in recent years.

e larch sawfly was reported from most of the range of its host in Wisconsin xcept for the northeastern part of the state. There was a slight increase n populations over those reported in 1952, but defoliation still remained ery light.

INE SAWFLIES

awfly populations are generally increasing in the Lake States and it is ex- ected that this trend will continue. Control operations were not conducted n 1953, but plantations should be watched closely in the future to follow the rogress of the build-up and the possibilities of anticipating damage as well s to determine needs for control.

ed-headed Pine Sawfly - Neodiprion lecontei (Fitch)

In general, the insect was more widespread over the Lake States in 1953 than in 1952. Increased activity was reported from Michigan, especially in the Upper Peninsula where the greatest concentration of populations occurred in northern Schoolcraft and northeastern Alger Counties. Highway plantings were heavily infested at points along U. S. 2 in Schoolcraft and Chippewa Counties and along U.S. 31 in Emmet County. In Wisconsin, there was an increase of this pest over

t of the state. Tree mortality occurred in plantations of small jack pine. insect was reported to be very abundant in Sauk, Sawyer, Juneau, Portage, Eau Claire Counties. Reports of defoliation of jack pine were received om scattered locations in Minnesota.

ropean Pine Sawfly - Neodiprion sertifer (Geoff.)

ere was a general increase in the over-all populations of this sawfly in ne Christmas tree plantations in the Lower Peninsula with the heaviest injury curring in Ingham County. Examinations of the areas treated in 1952 showed hold-over of the virus. No additional treatments using the virus disease re carried out in 1953. The areas that were treated in Illinois in 1952, ing the same virus, showed a hold-over when checked in 1953. The disease d spread naturally two chains out from the edge of the sprayed areas.

troduced Pine Sawfly - Diprion similis (Htg.)

Wisconsin, the range of this pest increased slightly, but there was an preciable decline in populations within this range. The infestations in 953 occurred on white pine in seventeen of the western counties. Light to avy injury was reported from various areas in Minnesota.

opulations of four other pine sawflies - Neodiprion americanum banksianae oh., N. swainei (Midd.), N. nanulus Schedl., and N. pinetum (Norton) increased n Wisconsin but were of local importance only. N. pinetum was also recorded rom Minnesota.

OREST TENT CATERPILLAR - Malacosoma disstria (Hbn.)

efoliation by the forest tent caterpillar continued in many areas throughout he Lake States. Minnesota again suffered defoliation over a larger area than either Wisconsin or Michigan. Prolonged cold weather in the spring, just after hatching, prevented normal feeding and resulted in a decline in the intensity of the outbreak. The areas of heavy defoliation have moved outward from the center of the 1952 infestation. The Mesabi Iron Range forms a striking boundary between defoliated and undefoliated areas. Heavy defoliation occurred in St. Louis, Carlton, Aitkin, Roseau, Pennington, Red Lake, Clearwater, Beltrami, Mahnomen, Hubbard, Becker, Ottertail, Todd, and Crow Wing Counties.

Based on egg mass surveys carried out in 1953, it is possible that 1954 will be the last year of heavy defoliation in Minnesota during the present outbreak. These surveys indicate that the infestation will be less severe than at any time since 1951 and moderate to heavy defoliation will be limited to an area encompassing approximately 6 1/2 million acres, compared to 11 million and 26 million in 1952 and 1953, respectively. This defoliation can be expected in the southwest tip of Cook County, the south half of Lake County, the southeast third of St. Louis County, the southeast half of Aitkin County and all of Carlton, Pine, Kanabec, Isanti, and Chisago Counties, and portions of Beltrami, Koochiching, Itasca, Becker, Ottertail, and Wadena Counties.

In Wisconsin, the northwestern part of the state was the major area of defoliation. Complete defoliation occurred in most of Douglas and the upper part of Bayfield Counties. Parts of Burnett, Washburn, and Sawyer Counties were

Forest Tent Caterpillar Defoliation

Lake States - 1953

Heavy

Medium

Light

Prediction

Forest Tent Caterpillar Defoliation

Lake States 1954

Heavy

Medium

Light

MILES

htly infested. Private landowners had aerial spraying done on their land parts of these counties during May and June. Centers of infestation were o found in Chippewa, Rusk, Forest, and Marinette Counties. Approximately 00 acres of aspen type suffered some degree of defoliation on Forest Service d in Oconto County.

general, defoliation in the eastern end of the Upper Peninsula of Michigan much less than in 1952. The outbreaks in the remainder of the Upper insula increased slightly in intensity, especially in Dickinson County. outbreak in Emmet, Cheboygan and Presque Isle Counties of the Lower insula increased in severity. Cocoon samples from both peninsulas showed ocoon mortality of 89.2 and 84.2 for the Upper and Lower Peninsulas res- tively. However, it is predicted that approximately the same area will for moderate to heavy defoliation in 1954.

KINGSTICK - Diapheromera femorata (Say.)

walkingstick was present in Minnesota in most of the same localities as in 51. However, heavy defoliation was found only in hardwood stands south of llager in Morrison County. Because of the low temperatures that occurred ring the early part of the summer, defoliation was not anticipated and did t develop. In Wisconsin heavy to moderate defoliations were reported locally several counties. Approximately, 1,000 acres on the Menominee Indian Reser- tion suffered defoliation, with 200 being heavily defoliated. Egg surveys to termine needs for treatment will be made in the summer of 1954. The insect s also abundant on Rib Mountain in Marathon County.

RCH CASEBEARER - Coleophora laricella (Hbn.)

e larch casebearer was again present throughout the range of its host in sconsin, but there was a very noticeable decrease in the northeast quarter the state and a lesser decrease in other parts. In Michigan, there was a cline in infestation of approximately 30 percent throughout the state. Many as suffering defoliation in 1952 were devoid of injury during 1953. Heaviest foliation was found locally in Schoolcraft, Dickinson, and Kalkaska Counties. servations also indicate heavier feeding in the Lower Peninsula than has curred in previous years. The casebearer was also reported present in the loodwood area of Minnesota.

HITE-PINE WEEVIL - Pissodes strobi (Peck)

his insect occurred scattered throughout the Lake States, but damage was enerally low except in localized areas. However, the weevil is one of the ost harmful insects affecting immature pine stands and for this reason should e kept under close surveillance. In Michigan, the population declined slightly n 1953, but the weevil was still very common throughout all but the extreme outheastern and south-central parts of the Lower Peninsula. Weeviling was eavy in the highly susceptible stands. More than 60 percent of the terminals ere attacked in local areas of Dickinson, Mackinac, Emmet, Otsego, Lapeer, and llegan Counties. These attacks were on white, jack and Scotch pines. A single eport of weevil attack on red pine came from each of two counties, Emmet and Oxford. Red pine was also attacked in plantations on the Nicolet National Forest in Wisconsin. High populations of the white-pine weevil can be found in many counties of Wisconsin in open grown white pine and Norway spruce and poorly-stocked stands of jack pine. Light infestations were reported from Minnesota.

ARATOGA SPITTLEBUG - Aphrophora saratogensis (Fitch)

his species of spittlebug has caused severe damage to red pine and jack pine lantations in the Lake States since its discovery in 1941. Beginning in 1952, ontrol estimates have been based upon a feeding-puncture survey in the fall nd a nymphal survey in the spring. The 1952 fall survey indicated a need or spraying 12,000 acres on National Forest land in Wisconsin and the Upper eninsula of Michigan. Based on the spring survey, 11,280 acres were actually prayed. This acreage included most of the 12,000 acres originally planned, lthough some areas were eliminated and others added as a result of the spring urvey. The degree of control varied because of certain conditions; heavy ains two hours after spraying and poor coverage reduced the amount of control n some areas.

The fall feeding-puncture survey conducted in 1953 indicated a general increase in feeding on those areas surveyed in 1952 but not sprayed because of the low population at that time. Based on the 1953 survey, the Forest Service has requested funds to spray 14,450 acres during 1954. Approximately, 11,000 acres are open plantations and the remainder are under an overstory, chiefly aspen. Release priorities of these latter plantations have been established based on entomological, silvicultural, and economic considerations. It is expected that most of these areas will be released before July 1954.

Destructive populations were also reported from state lands, but accurate details on acreage are not known. In Michigan, the greatest populations are centered in the western part of the Upper Peninsula. In the Lower Peninsula, there is a scattered distribution throughout the northern half with the largest populations in Presque Isle County.

EUROPEAN PINE SHOOT MOTH - Rhyaciona buoliana (Schiff.)

Injury by this pest increased during 1953. In Wisconsin, infestations were heavy in Milwaukee, Waukesha, and Sheboygan Counties. In the Milwaukee area it was very common on ornamental pines. In Michigan, there is a uniform spread of populations with heavy injury occurring only locally. There is a serious outbreak in Benzie and Grand Traverse Counties. This is 60 miles farther north than the limits of the infestation in 1952. Apparently, the warming influence of Lake Michigan and the moderate temperatures of the last two winters have made the northern spread possible.

BIRCH LEAF SKELETONIZER - Bucculatrix canadensisella Chamb.

A general epidemic of this insect occurred late in the season throughout Wisconsin and Michigan. Defoliation was very heavy in Dickinson, Charlevoix, Antrim, and Grand Traverse Counties in Michigan. This insect is not too harmful because the defoliation occurs late in the season after growth has been completed. Continued infestations by this insect may predispose stands to secondary attack by the bronze birch borer.

PINE SPITTLEBUG - Aphrophora parallela (Say.)

This insect was present throughout Michigan and Wisconsin, but very little damage resulted. Heaviest apparent injury was on Scotch pine in Muskegon County, Michigan.

OMALA BEETLE OR PINE CHAFER - Anomala oblivia Horn

Michigan, the overall population of this insect declined slightly, but ding injury was more severe than in 1952. Up to 100 percent defoliation both new and old foliage occurred in certain jack pine stands in Kalkaska, nzie, Grand Traverse and Montmorency Counties. Light feeding on red pine curred in these areas also. The insect has not been reported from the Upper ninsula.

STERN TENT CATERPILLAR - Malacosoma americana (F.)

is insect was present throughout the Lake States. Although defoliation mained heavy, populations declined throughout the Lower Peninsula. Most of e damage occurred on shade and orchard trees.

NE TORTOISE SCALE - Toumeyella numismaticum (Pettit and McD.)

avy infestations of this insect occurred locally. It was very prevalent on e Rapid River Ranger District of the Hiawatha National Forest in Upper chigan. In Wisconsin, local infestations occurred in Marinette, Florence, d Oconto Counties. Some tree mortality was observed in Oconto County.

ARGE ASPEN TORTRIX - Archips conflictana (Wlkr.)

his insect has greatly increased in numbers during the past year in Michigan. t occurred in the same stands as the forest tent caterpillar, but appeared ost serious in the eastern part of Dickinson County and adjacent Menominee ounty. In 1953, local pockets, 10 acres in size or larger, suffered 90 ercent defoliation.

THER INSECTS

he locust borer, Megacyllene robiniae (Forst.) was moderately abundant in isconsin, particularly in the southern part of the state.

efoliation by the walnut caterpillar, Datana integerrima G.&R., was reported o be very prevalent in southern Wisconsin.

Pine bark beetles, chiefly Pityogenes hopkinsi Sw., and Ips pini (Say.) were reported to have attacked drought-injured white pine in large numbers in isconsin. Sanitation measures were undertaken where there was danger of populations spilling over to attack healthy trees.

A constant surveillance should be maintained for insects that, although presently in endemic status in the Lake States, can become serious forest pests. Among these are: Spruce budworm, Choristoneura fumiferana (Clem.): black-headed budworm, Acleris variana (Fern.); hemlock looper, Lambdina fiscellaria (Guen.); bronze birch borer, Agrilus anxius Gory; hemlock borer, Melanophila fulvoguttata (Harr.); poplar borer, Saperda calcarata Say; and pine bark beetles of the genera Dendroctonus and Ips.